

REMARKS

Reconsideration of this application as amended is respectfully requested.

Claims 7-9 and 13 have been amended to provide proper form to the claim dependencies. No matter has been added.

Claim 1 has been amended in such manner as to distinguish applicants' invention more clearly over the prior art of record. Claim 1 is concerned with a seal-enhancing gasket coating, as opposed to a corrosion or fire-protection coating disclosed in Padget.

As discussed on pages 1-3 of the present application, tradition gaskets for high temperature applications such as exhaust systems of an internal combustion engine require some form of resilience to effect a fluid-tight seal when the gasket is clamped between two members to be sealed, such as the exhaust manifold and head of an engine. The resilience can be provided by utilizing a relatively thick layer of resilient material, such as a resilient rubber-based material or graphite, but where high temperatures are experienced (e.g., about 300°C) such as in an exhaust system, many resilient materials degrade and thus are not commonly used.

The alternative, in such high temperature applications, is to utilize a gasket which comprises a sheet of metal, such as stainless steel, which is formed into resilient ridges call "beads" which provide the seal. When such a metal gasket is clamped between two members, the clamping forces compresses the beads which are resiliently deformed and press against the members along the lines of the beads to effect a seal. However, such gaskets do not always provide as good a seal as is desirable because the beads are unable to enter into small cracks and fissures in the members so that gases and liquids can escape pass the beads.

The object of the present invention is to enhance the sealing characteristics of such metal gasket layers used in high temperature sealing applications so that they are able to minimize or eliminate the leakage of gases or fluids past the beads without degrading any seal material present on the gasket due to the exposure to the high temperature environment that the seal operates.

The objectives are achieved according to claim 1 in which the recited coating is adhered to at least a resilient sealing bead portion of a metal gasket layer. The coating has a thickness less than 100 microns and is effective to enhance the sealing ability of the sealing bead portion of the gasket by filling any cracks and fissures present in a surface of the embossed sealing bead portion and a member against which the gasket layer seals. Such a coating, applied to at least a resilient seal bead portion of a metal gasket layer as called for in amended claim 1 is neither taught nor suggested by the cited Padget reference.

Padget discloses application of a thin coating composition of various substrates to protect them against corrosion and/or fire protection. In order to provide such protection, it is inherently necessary that the thin coating remain in place on the substrate that it protects. Unlike the corrosion and fire protection coating of Padget, the seal-enhancing coating of claim 1 is present on the metal gasket layer in order that it flows under compression to enhance the sealing ability of resilient sealing bead portions of the metal gasket layer. It is respectfully submitted that one skilled in the art of metal gaskets would not look to Padget for a solution to the sealing problems with high temperature metal gasket layers, since providing a coating that moves and flows under a compression load applied to the gasket when clamped between two members would necessarily be disturbed and thus would not provide the corrosion and/or fire protection called for by Padget. It is respectfully submitted, therefore,

that claim 1 is distinguished patentably over Padget.

It is respectfully submitted that claim 1 distinguishes applicants' invention over Atkinson '201 in view of Atkinson '470. Atkinson '201 relates to a seal-forming coating of a gasket (as opposed to a seal-enhancing coating) in which sealing layers approximately 1mm thick of sealing material are secured to opposite sides of a tanged metal core. There is no metal layer having a resilient sealing bead portion as called for in claim 1.

Atkinson '470 discloses a seal coating of different character than that called for by claim 1. The seal enhancing coating of claim 1 includes exfoliated vermiculite, but no such vermiculite is present in the Atkinson '470 coating material. One skilled in the art considering Atkinson '201 and '470 would have no reason to combine their teachings, since Atkinson '210 is of a different type of gasket in which the thick coating is carried on a tanged metal core and performs the sole sealing function of the seal and is thus not suitable for high clamping loads under high pressure and temperature, and Atkinson' 470 lacks the required exfoliated vermiculite component called for in the coating of claim 1. It is respectfully submitted, therefore, that claim 1 distinguishes applicants' invention patentably over Atkinson '201 in view of Atkinson '470 and should be allowed.

For the same reasons, claim 1 is distinguishable over Padget in view of Atkinson '470, since Padget relates to a corrosion and fire-resistant coating and not to a seal enhancing layer of a metal gasket, and Atkinson '470 lacks the required composition, including exfoliated vermiculite, called for in claim 1. There is no reason why one skilled in the art considering Padget would consider modifying the disclosed coating or substituting it for that of Atkinson '470 since there is no teaching or suggestion in Padget of providing a seal-enhancing coating which flows under compression as applied to a resilient sealing bead

of a metal gasket layer, and such flowing would disturb the fire and corrosion protecting properties of the layer, and there is nothing in Atkinson '470 which teaches or suggests substituting the exfoliated graphite and fibrous filler for anything else, including exfoliated vermiculite as called for in claim 1, and it is not clear that modifying the coating in the manner offered by the examiner would retain the corrosion and fire protectant properties required by Padget. It is respectfully requested, therefore, that claim 1 distinguishes applicants' invention patentably over Padget in view of Atkinson '470 and should be allowed.

Newly presented claim 15 recites a seal-enhancing coating having many of the characteristics of the coating of claim 1, and further including particles of solid lubricant in the material to enhance the flowability of the material under compression without detracting from its seal-enhancing characteristics. It is respectfully submitted that newly present claim 15 is allowable for the same reasons set forth above in support of the allowability of claim 1. Further, the inclusion of a solid lubricant is neither taught nor suggested by any of the prior art references cited against claim 1. One skilled in the art would have no reason to incorporate a solid lubricant into the coating of Padget, since enhancing the flowability of the material would run counter to maintaining an undisturbed coating for corrosion and fire protection. As pointed out earlier, Atkinson '201 pertains to a different type of gasket, and Atkinson '470 lacks the vermiculite called for in claim 15. There is no teaching or suggestion to modify these references in any manner that would arrive at the coating called for in claim 15, including the presence of solid lubricant in a thin seal-enhancing layer containing exfoliated vermiculite.

The remaining claims depend, ultimately, on claim 1 and are believed to be allowable for the same reasons. The dependent claims distinguish over their parent and one

another by recited applicants invention in greater detail.

Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached page is captioned **VERSION WITH MARKINGS TO SHOW CHANGES MADE.**

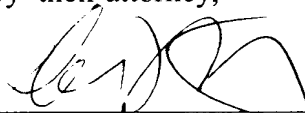
It is believed that this application now is in condition for allowance. Such action is requested.

The Office is authorized to charge or refund any fee deficiency or excess to Deposit Account No. 12-0755.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

Claim 1 has been amended as follows:

1 (Amended). A sealing-enhancing coating for a gasket or a portion of a gasket, characterised in that the coating comprises flack particles of chemically exfoliated vermiculite, at least 90% by weight of said particles having a thickness of no more than 30 microns, and no dimension greater than 1mm, the particles forming 10 to 90 wt% of the coating, the coating also comprising 50 to 10 wt% of an organic polymer binder which is heat resistant to at least 300°C, said coating being adhered to at least a resilient sealing bead portion of a metal gasket layer and having a coating thickness less than 100 microns which flows under compression to enhance the sealing ability of said sealing bead portion of said gasket by filling any cracks and fissures present a surface of said embossed sealing bead portion and a member against which said gasket layer seals.

Claim 6 has been rewritten as follows:

6 (Amended). A coating according to [any one of claims 1 to 5] claim 1, characterised in that the coating contains more of the organic polymer binder by weight than of the chemically exfoliated vermiculite.

Claim 7 has been rewritten as follows:

7 (Amended). A coating according to [any one of claims 1 to 6] claim 1, characterised in that the coating also comprises particles of a solid lubricant.

Claim 8 has been amended as follows:

8 (Amended). A coating according to [any one of claims 1-7] claim 1, characterised in that the coating also comprises a flaky filler.

Claim 9 has been amended as follows:

9 (Amended). A coating according to [any one of claims 1 to 8] claim 1, characterised in that the coating also comprises a supplementary inorganic binder.

Claim 11 has been amended as follows:

11 (Amended). A coating according to [any one of claims 1 to 4] claim 1, characterised in that the coating also comprises a waterproofing agent acting on at least one of the chemically exfoliated vermiculite and the supplementary inorganic binder.

Claim 12 has been amended as follows:

12 (Amended). A coating according to [any one of claims 1 to 11] claim 1, characterised in that the thickness of the coating [has a thickness up to] is equal to or less than 80 microns.

Claim 13 has been amended as follows:

13 (Amended). A coating according to [any one of claims 1 to 12] claim 1, characterised in that the coating has a density of below 70% of the theoretical density of the material forming the coating.

Please cancel claim 14.